

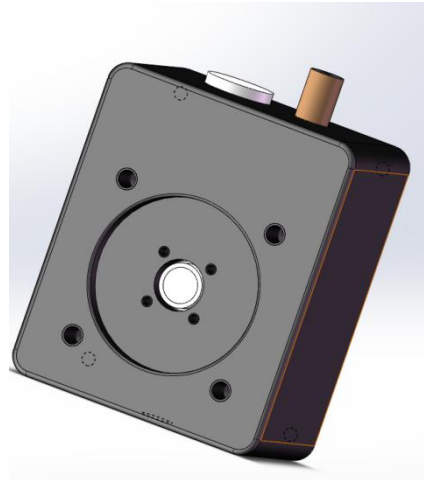
## DET20 Bias Photodetector

### 1. Overview

The DET20 is a ready-to-use photodetector for free-space optical systems. The unit consists of a circuit board, detector and RF connector packaged in a compact aluminum housing. An SMA connector is used at the output to reduce size and maximize frequency response.

### 2. Features

- 30mm mounting holes for optical cage system
- Large optical size
- Optional lithium battery power supply, lower noise
- Optional FC flange, can use fiber optic coupling



### 3. Applications

- Optical experiment
- Pulsed light waveform detection
- Measuring Instruments

### 4. Specifications

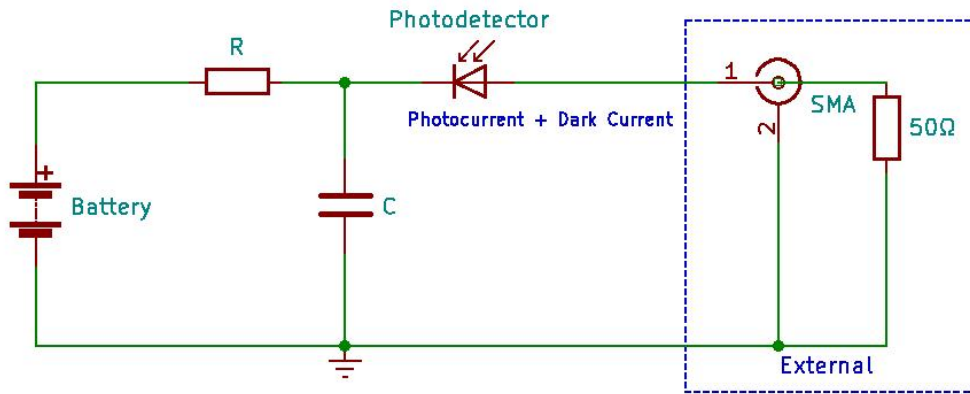
| Items                  | DET20A-20M    |
|------------------------|---------------|
| Materials              | Si            |
| Wavelength             | 320-1000nm    |
| Active Area            | 3.6x3.6mm     |
| Responsivity           | 0.6A/W @960nm |
| Bandwidth <sup>a</sup> | DC-20MHz      |
| Rise time <sup>a</sup> | 18ns          |
| Damage threshold       | 30mW          |
| Bias voltage           | 10V           |
| Output Impedance       | 50Ω           |
| Output coupling mode   | DC            |
| output connector       | SMA female    |
| Operating voltage      | 12VDC         |
| Operating temperature  | -20~65°C      |
| Storage                | -40~85°C      |

|             |  |
|-------------|--|
| temperature |  |
|-------------|--|

Remarks:

a For 50Ω load

## 5. Schematic Block Diagram



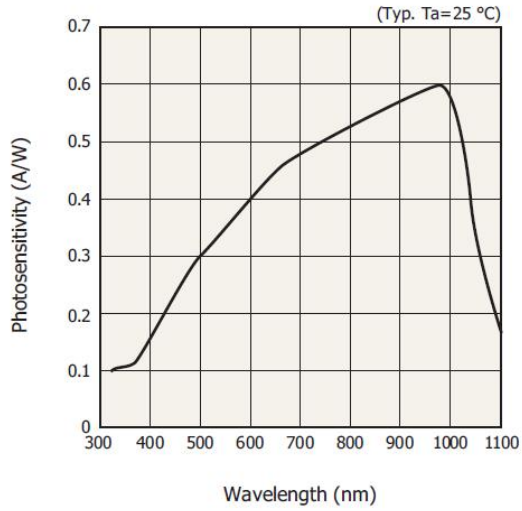
## 6. Operating Procedures

- Adjust the voltage grid of the oscilloscope to 10mV/div and set the input impedance of the oscilloscope to 50Ω;
- Connect the output of the detector to the input of the oscilloscope with a coaxial cable;
- Ensure that the power received by the detector is within the saturation power, and then turn on the light source to be measured and align it with the photosensitive area;
- Observe the waveform of the oscilloscope.

*Note: We use a load resistor R to convert the photocurrent I to a voltage V for viewing on an oscilloscope:  $V = I \times R$*

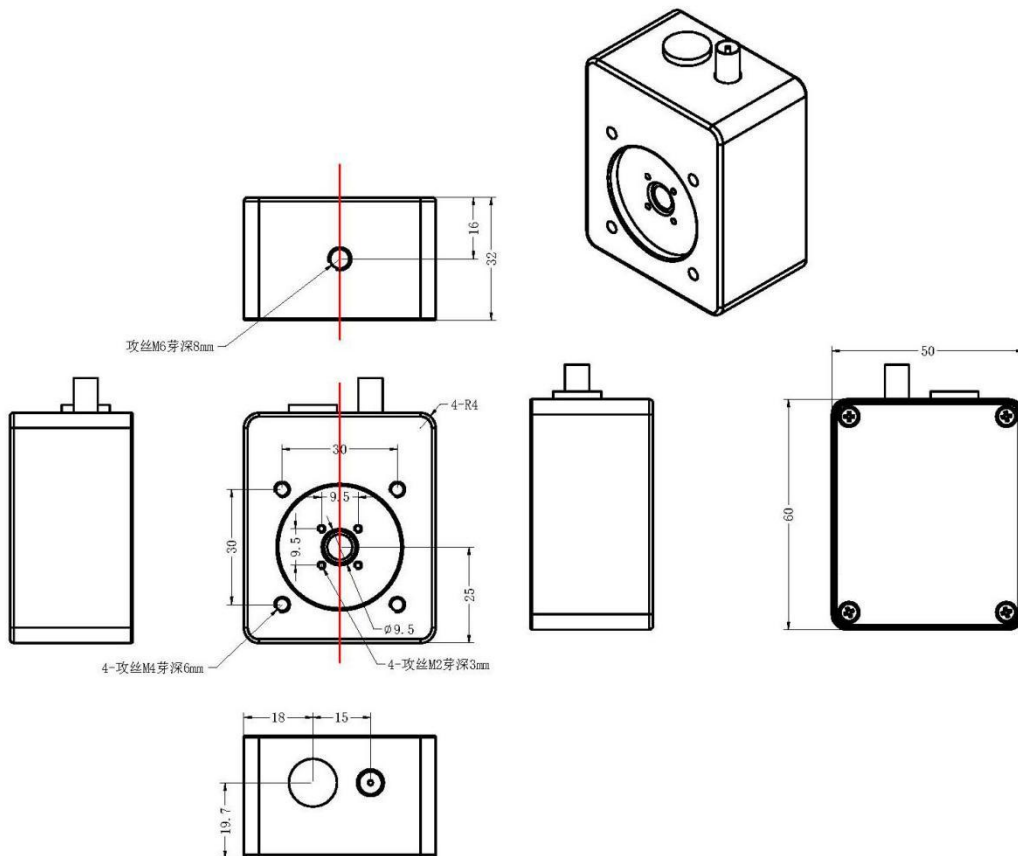
*Load resistance affects response speed, and for maximum bandwidth we recommend using a 50 ohm coaxial cable with a 50 ohm terminating resistor at the other end of the cable for impedance matching. If bandwidth is not important, the amount of voltage in a given light can be increased by gaining the load resistor. The length of the coaxial cable can have a profound effect on the response, so it is recommended to keep the cable as short as possible.*

## 7. Response curve



Note: Response curves are typical values for reference only.

## 8. Mechanical dimensions



**9. Shipping list**

| Item | Name of material    | num | unit | note |
|------|---------------------|-----|------|------|
| 1    | photodetector       | 1   | pcs  |      |
| 2    | power adapter       | 1   | Pcs  | 12V  |
| 3    | SMA to BNC RF Cable | 2   | pcs  |      |